

ARTICLE

Temporal Orders and Y Chromosome Futures: Of Mice, Monkeys, and Men

Sam Taylor Alexander
Monash University, Australia
sam.taylor-alexander@monash.edu

Sharyn Graham Davies
AUT University, New Zealand
Sharyn.davies@aut.ac.nz

Abstract

We bring together conceptual readings of time and temporality to discuss evolutionary theories of Y chromosome degeneration as they are spoken about in scientific and popular forums. In doing so, we suggest that debates over Y chromosome degeneration involve a form of abduction – tacking back and forth between different pasts, presents, futures – that frames templates for producing and securing sexed and gendered *presents*. Here we are using ‘sexed’ as a way of talking about physical bodies and ‘gendered’ as social ways of constructing those sexed bodies. We suggest that arguments over Y chromosome degeneration are as important for current debates surrounding sex, gender, science, molecular biology and a “crisis of masculinity” as they are for (ascertaining) the future of human evolution.

Narratives of Y chromosome degeneration have caught the attention of scientists and the media alike. From *Science* magazine to *BBC* and the *New York Times*, stories of the end of Man(kind) as we know *him* have gained a noteworthy place in the contemporary. Y chromosome degeneration has

Davies, S., & Taylor-Alexander, S. (2019). Temporal orders and Y chromosome futures: Of mice, monkeys, and men. *Catalyst: Feminism, Theory, Technoscience*, 5(1), 1-18. <http://www.catalystjournal.org> | ISSN: 2380-3312
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been tied to the emergence of a “wimpy,” emasculated new age male. It has been explained in terms of animal evolution studies. In this article we explore developments in DNA sequencing and Assisted Reproductive Technologies (ARTs) that have recently been entangled in debates over Y chromosome degeneration in humans. After being identified as the “testis determining chromosome” in humans in the early twentieth century, the Y was coded “as male, and as the molecular agent of masculinity in popular and scientific writing on sex chromosomes” (Richardson, 2013, p. 82). It is in popular and scientific writings that discussions of the relation between ARTs and Y chromosome degeneration are taking place. For example, following the publication in *Science* of an article called “Two Y Genes Can Replace the Entire Y Chromosome for Assisted Reproduction in the Mouse” (Yamauchi, Riel J, Stoytcheva Z, Ward M et al., 2014), popular and academic writers started to reflect on what, if anything, this research might mean for debates over Y chromosome degeneration in humans. Attending to these debates and reflections, we show that arguments over Y chromosome degeneration unfold different sociotechnical and biological timescales. They order and reorder the past, present, and future to “condition understanding[s] of contemporary events and future possibilities” (Haraway, 1991: 41) pertaining to production, reproduction, sex, and gender.

One of the reasons we became interested in the entangling of Y chromosome degeneration debates and the Yamauchi study noted above is that they bring together two very different timescales. On the one hand, molecular biologists who push the degeneration hypothesis predict that the human Y chromosome will no longer exist in 10 million years. On the other hand, people responding to the Yamauchi study raised the possibility of human reproduction without men in the near future (not in 10 million years). Hearing and reading commentators ask what the ability to reproduce using two Y chromosome genes means for Y degeneration debates and the future of men, we began to reflect on the role of, first, time in the making of sex/gender, and, second, how animal studies mediate debates about the future of the Y chromosome. Indeed, the use of experimental ARTs in mice,

as we show, requires and produces new time schemas. In fact, Charis Thompson (2005) argues that we need to pay attention to the “ontological choreography” that synchronizes a “large number of relevant kinds of time” that are “layered on top of each other” in ART treatment (p. 10). Similarly thinking about ARTs and time, Catherine Waldby (2015), in her study of egg freezing and the negotiation of future fertility, argues that we need to think critically about the relations of time and biology. She also demonstrates how women use reproductive biotechnology to “reconcile otherwise incommensurable differences” between biology, life course events, and the structure of career development and relationship formation (p. 479). This positioning has implications for the notion that a woman’s biological clock runs out.

Scholars have pointed to anticipation and dread as central elements of a “politics of temporality” at play in many Western societies. Such work points to how the conjuncture of technoscience and life makes imperative specific embodied, epistemic forms of labor. As the following quote shows, anticipation takes many forms:

Key dimensions [of anticipation] are: *injunction* as the moral imperative to characterize and inhabit states of uncertainty; *abduction* as requisite tacking back and forth between futures, pasts and presents, framing templates for producing the future; *optimization* as the moral responsibility of citizens to secure their “best possible futures”; *preparedness* as living in “preparation for” potential trauma; and *possibility* as “ratcheting up” hopefulness, especially through technoscience. (Adams, Murphy, & Clarke, 2009, p. 246)

Scholars have noted the paradox and flip side of anticipation: pessimism and dread. Building on her above quoted theorizing with Adams and Murphy, Adele Clarke (2016), for instance, asks us to think about anticipation as having a bodily impact that is the “margin of manoeuvrability,” “the margin of possibility and potential movement,” which is always haunted by uncertainty (p. 89). Here, uncertainty manifests in a fear of a future where men are emasculated or worse, redundant.

Below we bring together these conceptual readings of time and temporality to discuss evolutionary theories of Y chromosome degeneration as they are spoken about in scientific and popular forums. In doing so, we suggest that debates over Y chromosome degeneration involve a form of abduction—tacking back and forth between different pasts, presents, futures—that frames templates for producing and securing sexed and gendered *presents*. Here we are using *sexed* as a way of talking about physical bodies and *gendered* as social ways of constructing those sexed bodies. We suggest that arguments over Y chromosome degeneration are as important for current debates surrounding sex, gender, science, molecular biology, and a “crisis of masculinity” as they are for (ascertaining) the future of human evolution. Evolutionary predictions are constituted with a sense of anticipation in that they ask us to inhabit and produce certain forms of life and ways of being. They are haunted by biosocial and technoscientific uncertainty, by change. They bring to bear questions about our human ability to remake ourselves, and thus open up possibilities about how we should live as sexed and gendered beings. We show how sexual and gendered politics shape popular and academic writers’ reflections on what the Yamauchi study might mean for debates over Y chromosome degeneration. Here attending to the relation between time and biology becomes an entry point for us to unpack sex/gender: it shows how the role of temporal orders (e.g., anticipation) is shaped via-à-vis heteronormative ideas of society, biology, and reproduction as manifest in scientific research.

And of the Y, Time, Sex and Gender

If ARTs have produced new relations between time, sex, and biology, then research exploring the minimum number of Y chromosome genes needed for human reproduction has become a focal point for understanding what our biological and technological present means for sex/gender in the near future. Building on scholarship that emphasizes the importance of attending to the situated and sexed and gendered (Fausto-Sterling, 1989; Wilson, 2015) dimensions of biological knowledge, we explore how different

temporal orders frame the interrelation of technoscience, gender, sex, and humanity.

In scrutinizing the reduction of sex differences to biology, critical theorists of sex and gender have grappled with the interrelation of nature and culture (Butler, 1993; Fausto-Sterling, 2000). In the process, the positioning of gender as a counterpoint to biological reductionism itself became the object of analysis. Attributing differences between males and females to cultural factors fails to account for the complex interactions of biology and society, of nature and culture—or naturecultures (Haraway, 2003). Anne Fausto-Sterling (2012) argues that the “development of sex and gender in humans is layered” (p.119). She speaks about different sexes that develop in utero—chromosomal sex, fetal hormonal sex, and anatomical sex—as they interact with diverse biological, environmental, and social factors (p. 119). Rather than distinct domains, nature and culture are thus coproduced and so are the categories of sex and gender. In the laboratory, for example, studies of sex difference using mice models are mediated by dominant cultural understandings, resulting in what Joan Fujimura (2006) terms the “awkward surplus” of knowledge that runs counter to prevailing beliefs. In other words, culture and our environment shape our biology, and vice versa. It is to this relationship that we refer when we speak of the coproduction of nature and culture.

Studies examining Y chromosomes often draw on animal studies to make sense of human sex. During the 1990s, the Y degeneration debate became a focal point of discussion about both declines in masculinity (those behaviors popularly considered suitable for men) and arguments surrounding the role of gender and sex politics in steering scientific research (Richardson, 2013, pp. 149-176). Sarah Richardson showed how prominent scientists and science writers symbolically linked Y chromosome degeneration to “the decline of male social status after feminism” (p. 153). Richardson also showed that widespread media interest followed on the back of, and pushed ideas that, environmental, industrial and technological change (including ARTs) is making men socially and biologically vulnerable. Significantly, then, while Y degeneration proponents posit it will be around

10 million years before the Y becomes extinct, the debate itself became linked to contemporary sex/gender relations (i.e., the social status of men) as much as our evolutionary future. Moreover, the mammalian Y chromosome qua symbol of masculinity has been forged both by the science of chromosomal sex and studies of the Y's role in reproduction. Debates over Y chromosome degeneration thus concern questions of reproductive time and family time, which are above all heteronormative time/space constructs (Halberstam, 2005, p. 10).

Attending to how arguments over Y chromosome degeneration unfold different sociotechnical and biological timescales, and how they arrange the past, present, and future, forced us to think about how time is ordered in the translation of what animal studies mean for human futures. In their study of animal models and reproductive science, Carrie Friese and Adele Clarke (2012) use the word “transpose” because it “captures the back and forth relationships between different lines of work, different spaces and different species’ bodies that occur in modelling practices” (p. 34). This use of *transpose* allows them to explore the frictions that limit such models, and to explore the products that emerge from the relationships between labor, spaces, and bodies. Rather than transposing findings between context and species, studies of the Y chromosome tie species together or keep them apart. For instance, researchers might argue that we should look at primates versus mammalian species with an XO chromosome formation to understand degeneration due to the evolutionary story these animals allow them to tell. In other words, human futures are built on mice models, and scientists’ narrations are shaped by reproductive politics and heteronormative ideas.

We argue, however, that a gendered and sexed politics of temporality undergirds this epistemic labor. By this we mean that what non-human biology means for humans is mediated by temporal orderings, orderings that are mediated by gender and sex politics as investigators carry out and disseminate their research. We ask, (1) how is time “done” in such animal studies, and (2) what is at stake politically in such doing of time? Attending to how time is done—which is to say, here, how the past, present, and future

are understood in relation to the each other and ordered based on that understanding—we argue provides a further entry point for considering popular and scientific discussions of sex/gender and perhaps even how these discussions shape current gender relations. Certainly, these discussions may shape more than gender relations; there is potential to shape other political/social/analytical programs and further research may fruitfully explore such avenues.

While Charis Thompson's and Catherine Waldby's writings quoted above reveal how the actors involved in ARTs synchronize different kinds of time, our analysis demonstrates how sex/gender norms mediate temporal orders and thus how we understand the present and future of sex/gender. And in exploring this interrelationship, we are, as mentioned above, particularly interested in how and why Y chromosome degeneration and experimental ARTs limiting the number of Y chromosome genes needed for reproduction, are spoken about together. To explore this interrelationship further we here give some examples.

And of the Wimpy Y

In the introduction to her commentary on the Yamauchi mice study noted earlier, professor of cell biology at Duke University, Blanche Capel (2014), tied the study to analysis of Y chromosome degeneration:

The future of the mammalian Y chromosome has been the subject of much speculation. Because the sex chromosomes, X and Y, do not recombine genetic material through most of their length during meiosis (the process that produces gametes), it is argued that the Y chromosome is degenerating, undergoing a rapid evolution that is perhaps leading it down the road to extinction. (p. 32)

Here Capel is directly linking a study of mice to the possible future obsolescence of men. So what actually is this debate about the degeneration of the Y chromosome?

A useful starting point for understanding the degeneration hypothesis is a debate that took place between two molecular biologists on the stage

at the 18th International Chromosome Conference in Manchester, England. The conference was organized in part by Daren Griffin (2012), a professor of biology at the University of Kent. Here, we analyze the debate as reported by him.

Jenny Graves of the Australian National University took to the stage. Across from her was Jennifer Hughes of the Whitehead Institute for Biomedical Research, a non-profit research and teaching center located down the road from, and with strong ties to, Harvard University and MIT. On the agenda was a formal debate between the two biologists. The issue of contention was “whether the mammalian Y chromosome, a symbol of masculinity in both the scientific and popular press, is doomed in evolutionary terms” (Griffin, 2012, p. 36). Agreed upon was that the mammalian Y chromosome has mutated significantly over the last few hundred million years, becoming smaller and smaller in the process. What was questioned was whether such genetic degeneration, which could result in the disappearance of the Y chromosome (and “Man” as we know him), will continue or “whether it has reached a point of equilibrium where it can go no further” (p. 35).

Graves argued her long-standing position: the Y chromosome will eventually disappear. To illustrate this point Graves noted that the human X chromosome is a good-sized chromosome, bearing approximately one thousand genes that code for proteins. Graves calls these genes the “brains and balls genes.” In contrast, the “wimpy” Y chromosome is for Graves a “genetic wasteland,” full of “junk”: it bears only forty-five genes and these genes code proteins that are active almost exclusively in the testis. According to Graves, the Y chromosome has “gone crazy,” and is subject to inefficient variation, which has left it vulnerable to degradation. Adding to this inherent vulnerability is the fact that there “is practically nothing left of the original human Y [chromosome] and the added part of the human Y is degrading rapidly” (Griffin, 2012, p. 39). Graves’s exposition of Y chromosome degeneration inverts the gendered qualities often attributed to the X and Y chromosome; the “male” chromosome is unstable, crazy,

inefficient while the “female” chromosome contains genetic information crucial to reproduction and intelligence.

An opposing side of the debate was presented by the US-based Hughes, who used recent data from primate studies conducted by the Whitehead Institute to rebut Graves’s claims. Comparing the Y chromosome of the rhesus macaque, a monkey that shares a common ancestor with *Homo sapiens*, with the human Y chromosome, led Hughes to suggest that the latter has lost only one gene over this timeframe.

In response to Hughes, Graves reiterated that the human Y chromosome originally had 1,400 genes but that only forty-five genes are currently present, and moreover that these remaining genes are highly degraded. The rhesus macaque’s Y chromosome, she stated, contains twenty genes that match with the genes on its X chromosome. Nineteen of these twenty genes found on the rhesus macaque’s Y chromosome are the same as the genes found in the contemporary human Y chromosome (Griffin, 2012). In other words, Graves argued that only forty-five genes are left on the macaque’s Y chromosome. In contrast, Hughes argued that while humans and macaques share nineteen genes, humans have only lost one chromosome in the 25 million years since the two species shared a common ancestor. Human Y chromosome loss was thus presented by Hughes as being slow relative to other species. The implication here being that men are in no danger of losing any of their Y chromosome and hence their manliness, and masculinity was not under threat.

Each biologist was given further time to get their point across. Graves focused her attention on the pitfalls of examining primates for the purposes of discussing the future of the Y chromosome. Drawing on research into mammalian species that have an XO chromosome formation, rather than just an X or Y, her argument was that “in analyzing the relationship between primates, we are looking at a very tiny evolutionary interval and that we need to consider the issue in a broader evolutionary context” (Griffin, 2012, p. 42). For Graves, 100 million years is a tiny evolutionary interval.

In response, Hughes argued that gene conversion can preserve the Y chromosome. Gene conversion is the process where one DNA sequence

replaces another sequence such that the sequences become identical after the conversion event. To demonstrate her point that conversion “will swiftly remove Ys that contain mutated copies of genes that play important roles in male fertility,” Hughes drew on recent studies from population genetics and simulation modeling that indicate “even low levels of gene conversion are sufficient to maintain the integrity of Y-linked genes” (Griffin, 2012, p. 43). In other words, while Graves argues that we are reaching the end of Man, Hughes argues that through technological developments the Y, and hence Man, can be saved.

While both scholars seek to learn from other mammalian life forms to understand the future of Homo Sapiens, their analysis diverges not only because of the evidence they call on but also due to how they locate and understand that evidence in time. The speakers’ disagreement was mediated by the temporalities of evolutionary science. In other words, the speakers disagreed because Graves was looking at evolution over billions of years while Hughes was looking at only a few million years. How we view evolution in time shapes how we talk about the future of human beings. Also, the two scientists were looking at different species and different species tell a different story of the evolution of gender/sex, and present a different idea of the present and future of human beings.

Despite these different arguments, it is possible to see how temporalities mediate questions of what we can learn from our non-human companions. In this incarnation of the Y chromosome debate, our similarity and difference to other mammalian species is rendered through the temporalities of biological evolution. It is the question of the *speed* of Y chromosome degeneration that Graves and Hughes ultimately disagree on: Has degeneration slowed to the point of standstill or will it continue until the Y becomes an O? Moreover, rather than requiring the “transposition” or “extrapolation” of animal studies to make sense of human life, what took place in this debate was the coupling of human to non-human through the enactment of evolutionary time and the enactment of biology. Epistemic disagreements were mediated inter alia by different readings of the relationship between biology and time and by how to understand biological

pace. Speed and pace are important to anticipation; they open differing futures and presents. In one future, the Y chromosome is stable; in the other it is degenerating. In their corresponding presents, the stable Y can (and has) been associated with a form of relief that men are not becoming reproductively redundant. In the present associated with the degenerating Y chromosome, the symbol of maleness is “wimpy,” containing a few necessary genes but otherwise replete with “junk” DNA (Richardson, 2013, pp. 149-151). In this latter reading, men are envisaged as being/becoming wimpy and redundant.

And of Mice

So, what have experimental ART studies in mice got to do with any of this? Principle investigator in the Yamauchi study (2014), Monika Ward of the University of Hawai‘i, explained her mouse research in an interview with Jon Stewart (2013) of the BBC:

To make a male, essentially, we need one gene, this is the [sex-] determining gene *Sry*. What we were interested in in the lab was to study the function of Y chromosome genes. We wanted to find out what is the minimum from the Y chromosome that we need when we apply so-called assisted reproductive technologies, when we help sperm to fertilize [eggs]. We were able to show that we can minimize contribution of the Y chromosome to only two genes, the testis-determining gene *Sry* and another gene [*Eif2s3y*].

An outspoken critic of Graves’s thesis that the Y chromosome is degrading, Ward was quick to use the BBC interview to clarify that her research did not mean there would be no human males in the future. Moreover, when asked if and how the study feeds the debate on gene disappearance, she offered the following observation:

What we have shown is that yes, we can eliminate most of the Y chromosome and use only two genes out of it *but only with assisted reproduction*. And for normal processes, for normal [read heterosexual] reproduction I think the genes on the Y chromosome

are really needed. Research from my lab and from other groups clearly indicates this: when we have other genes then the sperm function disappears, the sperm number decreases, the motility is poor, so clearly these individuals that have the Y chromosome missing become infertile, which kind of emphasizes the fact that these genes are needed.

In noting that it is possible to “eliminate most of the Y chromosome,” Ward emphasizes that her laboratory is not seeking to engineer a new form of nature (without men) but to develop a reproductive technology. In doing so, she went on to equate normal male biological process with sperm function and levels. She also noted that male fertility declines when the number of genes decrease because the other genes on the chromosome are needed to produce fertile progeny.

In such statements, Ward’s research findings introduce a contradiction: Y chromosome genes are needed but it is possible to have mammalian reproduction without them. This contradiction was further highlighted as the interview continued. For instance, although insistent on the importance of the Y chromosome, when the radio show host Jon Stewart asked if her work foreshadows a time where human reproduction is possible without men, Ward was dismissive of the prospect while being unable to rule out completely the potential of such a future:

I can’t see this happening really at the present; it is still more of a science fiction kind of thing. We would have never thought it possible ever to conceive a child in a tube or a petri dish twenty or thirty years ago, so who knows what will happen. But I would like to believe that the Y chromosome is needed, *and we are by no means trying to eliminate men from this world.* (emphasis added)

Echoing her earlier comments, Ward engages in her own form of boundary work by distinguishing her research and science fiction. She follows this distinction with a speech act that works to maintain extant biological and sociotechnical orders: although “by no means trying to eliminate men from this world,” she is unable to rule out a future where human reproduction is possible without sperm or the Y chromosome itself. Moreover, Ward is

unable to deny her role in producing this potential future. If “boundary work” speaks to how boundaries are produced between domains such as science and non-science, politics and society, human and non-human (Braidotti, 2013; Gieryn, 1991; Haraway, 1988), then this example points to the productive dimensions of the moral and epistemic dimensions of anticipation engaged in by people like Ward. We can see here the “abducting” nature of anticipation that we referred to earlier. Here, Ward is a boundary-making subject: inhibiting states of uncertainty as she reflects on pasts, presents, and futures, all the while leaving open future possibilities and preparing the listener for a (traumatic) future where men are not needed in human reproduction. Occupying a “margin of possibility and potential movement” (Clarke, 2016, p. 89), Ward constructs boundaries between science and science fiction, and between the present and future, by placating listeners that her aim is not to replace men.

And of Sex/Gender Futures

In the 2013 Munk Debates, *New York Times* columnist Maureen Daud (2013) remarked, “So now that women don’t need men to reproduce and refinance, the question is, will we keep you around? And the answer is, ‘You know we need you in the way we need ice cream — you’ll be more ornamental.’” In this brief paper, we have addressed two key questions: (1) How is time “done” in Y chromosome studies and (2) what is at stake politically in such doing of time? In terms of how time is done, we showed that debates around the Y chromosome are given specific dimensions according to how they are talked about in time. For instance, when proponents of the Y degeneration theory posit it will be around 10 million years before the Y becomes extinct, the debate gets tied to contemporary human relations just as much as to an evolutionary future. Ongoing disagreements about the evolutionary degeneration of the Y chromosome hinge on the temporalities of biology. Further, as different animals avail themselves to different enactments of time, they are each asked to say something different about the present sexed status of humankind. Scientists

reconstitute the evolutionary past and societal future of humankind by enrolling isolated genes and other species' bodies into their experiments of the Y chromosome. They search our "natural" evolutionary history and experiment with technologically mediated futures, and in doing so challenge the meaning and necessity of men and sex.

It is in this tying of the evolutionary to contemporary sex/gender relations where the political stakes become clear. The evolutionary possibility of Y chromosome depletion and men becoming obsolete ignites political projects. Actively working on mice in the present, Ward and her colleagues perform "sex itself" (Richardson, 2013) as a biological reality by locating on the Y chromosome (at least two) genes that are *necessary* for reproduction. For what reason would Ward need to appease people that her project did not show the end of men's reproductive role other than to quell political fears among lay people and potential research funders that the future of men is in jeopardy? A future of wimpy men is not what society wants to hear, we suspect. Here we have built on studies that demonstrate how reproductive technoscience reorders the relation between time and biology to show how the political inflects biological debates, revealing how popular and scientific discussions of sex/gender align with contemporary concerns of heteronormative reproduction. Debates over Y chromosome degeneration involve a form of abduction—a tacking back and forth between different pasts, presents, futures—that frames templates for producing and securing gendered time/space. We thus note that arguments over Y chromosome degeneration and ARTs are as important for current debates surrounding gender, sex, science, molecular biology, and a "crisis of masculinity" as they are for (ascertaining) the future of human evolution.

We end here by demonstrating how the debate about time and genetics has current gender implications. While Graves and others talk about the Y chromosome perhaps eventually dying out, popular media distills this into often alarmist headings about the failure of men. Here we note three gender implications.

Men are failing to reproduce. In 2018, the *Daily Mail* reported that soybeans could make men infertile, and that the "average sperm count of a

European male has dropped by a quarter over the past 25 years” (Chapman, 2018). Greg Hampikian (2012) quipped in *The New York Times*, “Men, Who Needs Them? If all the men on earth died tonight, the species could continue on frozen sperm. If the women disappear, it’s extinction.” *Men are failing to achieve*. In 2015, *The Washington Post* reported an all too common story of the educational gap: “Poor boys are falling behind poor girls, and it’s deeply troubling” (Guo, 2015). Jeff Guo continued, “For every generation since the boomers, women have been more likely than men to earn high school and college diplomas.” *Men are just failing*. In her article titled “Man Down: The Attack on American Masculinity,” Sharon Ambrose (2014) noted that “Thanks to modern science, men are not even essential for procreation. In a culture where women are encouraged to be empowered and independent in the workplace and at home, men are left searching for their place in society and boys don’t know where to turn, which can lead to devastating effects.” And men are just so last century: “They seem to have stopped evolving, sulking like Achilles in his tent [struggling] to figure out the altered parameters of manliness and resist becoming house-dudes” (Daud, 2013).

The chromosome debate that scientifically traverses millions of years and multispecies is collapsed in popular media and distilled to create fear and anxiety about the current place and contribution of men. This distillation directly influences public policy, be it in education, health, or research on the humble soya bean. This distillation also inflames reactive debate with assertions of “let’s show ’em what real men are really like.” But the questioning of Man as we know him also spurs productive discussions, such as those around the #MeToo campaign, and can result in significant challenge to the sex/gender order in some sectors of society. Some women, for instance, are feeling empowered to speak out about past sexual abuses by men, as the 2018 cross-examination of Supreme Court candidate Brett Kavanaugh has showed. The spinoff effects of the #MeToo campaign have also included challenges to various sexual, class, and gender politics that are bringing justice to some. Further, these changes and challenges have resulted in prestige being attached to being a “house dude”—such as the

(unmarried) partner of New Zealand Prime Minister Jacinda Ardern who is excited about being a “house dude” and stay-at-home dad and does not feel threatened about this brave new world (Cardwell, 2018). Maybe the End of Man debate is just foreclosing one type of man while opening endless possibilities for others. Here, we hope to have illustrated ways in which the analytical vocabulary employed across this article is playing out in contemporary social life.

Acknowledgements

Thank you to the editors and the anonymous reviewers for their incredibly helpful and insightful comments.

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Bios

Sam Taylor Alexander is a researcher at Monash University.

Sharyn Graham Davies is Associate Professor at AUT University and researches gender and sexuality.